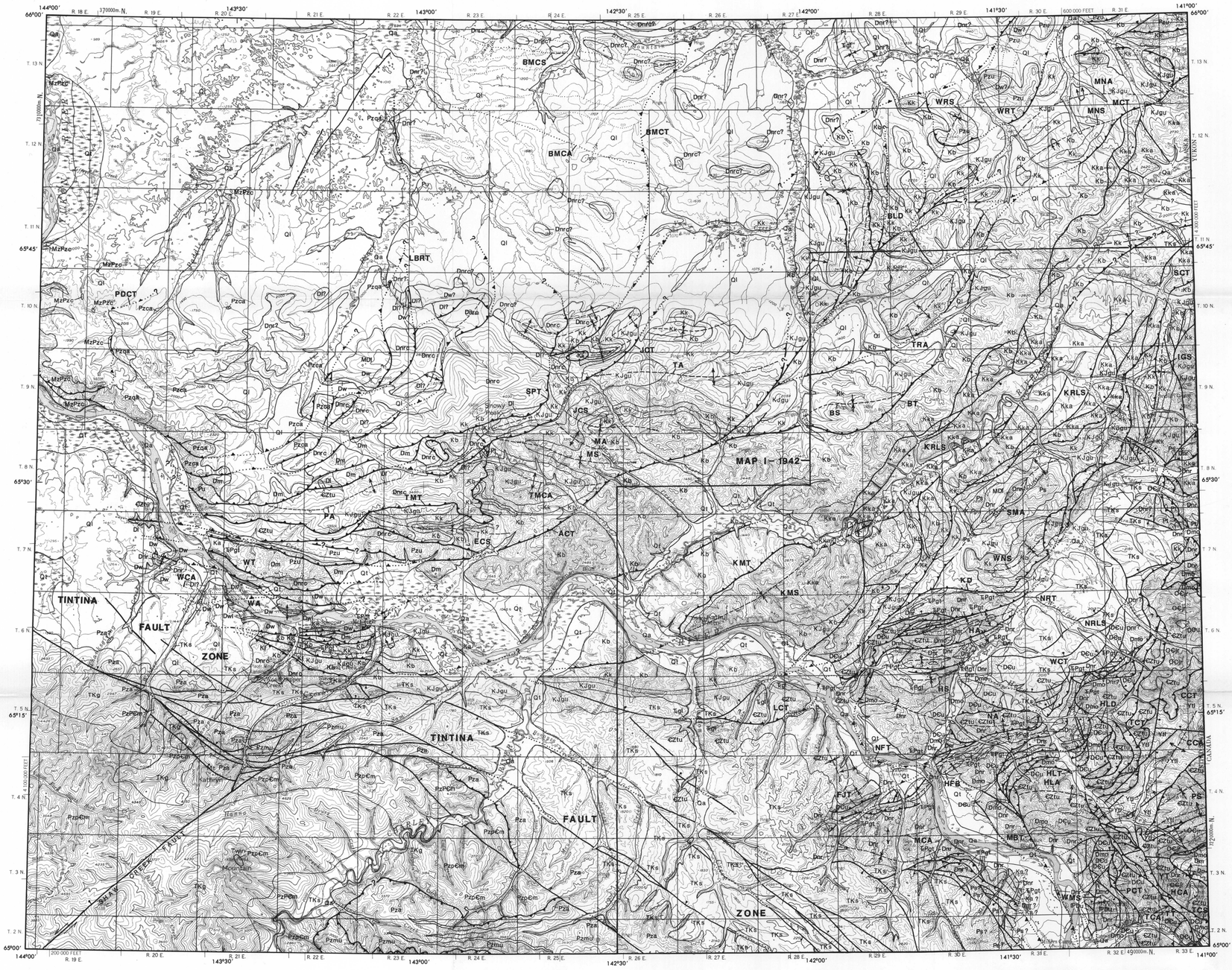
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-2004
SHEET 1 OF 2



Base from U.S. Geological Survey, 1956.
Universal Transverse Mercator projection.

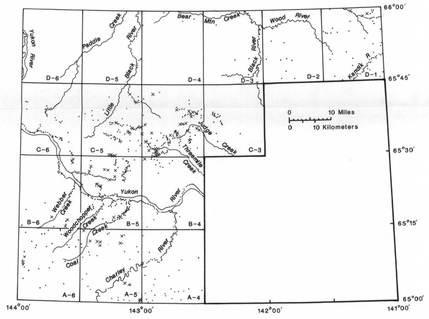


Figure 1.- Distribution of field stations in part of the Charley River quadrangle. Dot, locality occupied by Earl E. Brabb, Michael Churkin, Jr., or co-workers, 1960-1980; X, locality occupied by James H. Dover and Ronny T. Miyaoka, 1982-1985.

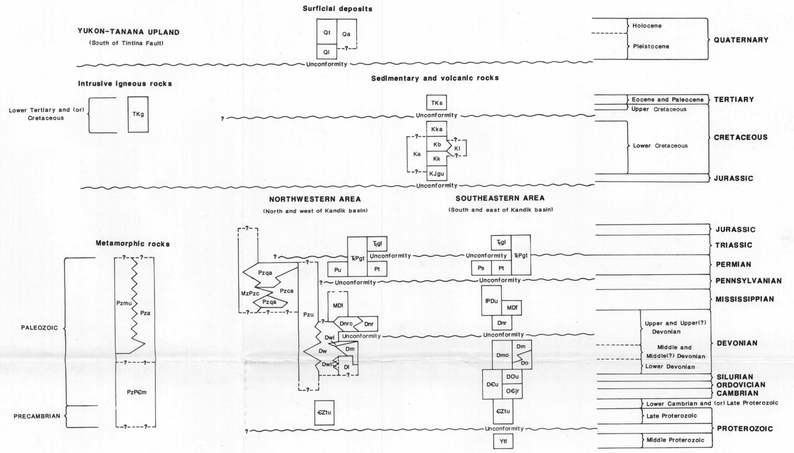
SCALE 1:250 000

CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Geologic mapping modified extensively from Brabb and Churkin (1969) and unpublished geologic mapping in 1962 by British Petroleum Exploration Company, Alaska (R.Stoneley, party chief; B.R.Brown and K.F. Thompson, geologists; and R.B. Nelles, J.E. Dagenais, and P.E.K. Fuchs, assistant geologists), based on helicopter-supported reconnaissance mapping by the authors in 1982-85, and on re-examination of the original field notes and field sheets (1960-63, 1967-68, 1973) of Brabb and Churkin.

LOCATION MAP AND INDEX TO 1:63,360 QUADRANGLES (SHADED)

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Quaternary surficial deposits

Qa — Alluvium (Holocene and Pleistocene)—Silt, sand, and gravel deposited as channel fill, flood plain, alluvial fan, and deltaic deposits
Qt — Terrace deposits (Holocene and Pleistocene)—Alluvium in terraces standing as much as 150 m above present stream level
Ql — Loess (Pleistocene)—Wind-blown silt and sand; includes alluvium, colluvium, or other surficial materials in places

Tertiary and Cretaceous sedimentary rocks

TKs — Sedimentary rocks, (Eocene, Paleocene, and Upper Cretaceous)—Poorly consolidated sandstone, grit, pebble- to cobble-conglomerate, and carbonaceous mudstone containing thin lignitic coal seams

Mesozoic sedimentary rocks

Kka — Kandik Group
Kathul Graywacke (Lower Cretaceous)—Sandstone, conglomerate, and argillite, all with volcanic clast component
Kb — Biederman Argillite (Lower Cretaceous)—Rhythmically interbedded carbonaceous argillite, siltstone, and sandstone
Kk — Keenan Quartzite (Lower Cretaceous)—Massive, ridge-forming slightly feldspathic quartz-arenite; locally has subordinate carbonaceous shale and siltstone interbeds
Ka — Argillite (Lower Cretaceous)—Stratigraphic position within Kandik Group is uncertain
Kl — Limestone (Lower Cretaceous?)—Composed mainly of Inoceramus prisms; stratigraphic position within Kandik Group is uncertain
KJgu — Glenn Shale
Upper part (Lower Cretaceous to Middle Jurassic)—Carbonaceous shale, and subordinate siltstone and sandstone; unconformity suspected at base
TR gl — Lower part (Upper and Middle Triassic)—Thin-bedded, fossiliferous limestone and calcareous shale

Mesozoic and Paleozoic sedimentary rocks

P Pgt — Lower part of Glenn Shale (Upper and Middle Triassic) and Tahkandit Limestone (Permian), Undivided
MzPzc — Circle Volcanics (Triassic and upper Paleozoic)—Intrusive and extrusive rocks of mafic to intermediate composition, and interlayered chert, carbonaceous argillite, and quartzite; subordinate tuff, limestone, and ultramafic rocks

Paleozoic sedimentary and igneous rocks

Pt — Tahkandit Limestone (Permian)—Massive bioclastic limestone, locally containing chert-pebble-conglomerate
Ps — Step Conglomerate (Permian)—Chert- and quartzite-clast pebble- and cobble-conglomerate and quartz-chert arenite; locally contains limestone lenses with Tahkandit fauna
Pu — Sedimentary rocks, undivided (Permian)—Mainly sandstone, siltstone, and quartzite
Pzqa — Quartzite and argillite (Upper Paleozoic)
Pzca — Chert and argillite (Upper Paleozoic)
Pzu — Clastic rocks, undivided (Paleozoic?)—Mainly carbonaceous argillite, subordinate quartzite, and minor chert; associated with mafic volcanic rocks tentatively assigned to the Woodchopper Volcanics near Wood River, along the northeastern edge of the map, and contains minor gabbro along Edwards Creek in the west-central part of the map
Pzmu — Mafic and ultramafic rocks, undivided (Paleozoic)—Contains abundant chert, siliceous argillite, and tuff in places; typically blastomylonitic or phyllitic
Pza — Phyllitic argillite (Paleozoic)—Mainly siliceous argillite or argillaceous chert, locally containing abundant greenstone interlayers and lenses; typically converted to blastomylonitic phyllite
PzpCm — Metamorphic rocks (Paleozoic and Precambrian)—Mainly medium- to high-grade pelitic schist; locally migmatitic
MDf — Ford Lake Shale (Upper Mississippian to Upper Devonian)—Laminated siliceous shale and chert
MPDu — Calico Bluff Formation (Lower Pennsylvanian and Upper Mississippian) and Ford Lake Shale (Mississippian to Upper Devonian)—Rhythmically interbedded limestone and shale, and laminated siliceous shale and chert
MDl — Limestone and dolomite (Mississippian and Upper Devonian)
Dnr — Nation River Formation (Upper Devonian)—Interbedded mudstone, chert-quartz-arenite and wacke, grit, and pebble- to cobble-conglomerate containing quartzite and multicolored chert clasts
Dnrc — Conglomerate (Upper Devonian?)—Contains pebble- to boulder-sized clasts of quartzite and multicolored chert, and subordinate interbedded quartz-chert-arenite and wacke, and siltstone; poorly dated. Previously mapped as Permian Step Conglomerate (Brabb and Churkin, 1969), but tentatively assigned here to a more coarsely conglomeratic facies of the Devonian Nation River Formation based on lithologic similarities and stratigraphic association
Dwv — Woodchopper Volcanics (Upper?, Middle?, and Lower Devonian)—Amygdaloidal basalt, pillow basalt, and aquagene tuff, and subordinate interbedded chert, argillite, quartzite and limestone
Dwl — Limestone (Upper?, Middle?, and Lower Devonian)—Occurs as locally mappable lenses in Woodchopper Volcanics
Dl — Limestone and dolomite (Devonian)—May possibly include Silurian and(or) older rocks in places
Dm — McCann Hill Chert (Upper to Lower Devonian)—Chert and siliceous argillite; locally contains bioclastic limestone in lower part
Dmo — McCann Hill Chert and Ogilvie Formation of Clough (1980), undivided (Devonian)
Do — Ogilvie Formation of Clough (1980) (Middle? and Lower Devonian)
DOu — McCann Hill Chert (Upper to Lower Devonian) and Road River Formation (Lower Devonian to Lower Ordovician), undivided—Chert, siliceous argillite, and graptolitic shale, mapped only at YARM Cascs, near east-central edge of the map
DOu — Road River Formation (Lower Devonian to Lower Ordovician), Hillard Limestone (Lower Ordovician to Lower Cambrian), Adams Argillite (Lower Cambrian), and Funnel Creek Limestone (Lower Cambrian), undivided—Limestone, dolomite, chert, and argillite
OCjr — Jones Ridge Limestone (Upper or Middle Ordovician to Lower Cambrian)—Massive, oolitic, typically silicified limestone and dolomite

Lower Cambrian? and Precambrian sedimentary and igneous rocks

€Ztu — Tindir Group (Lower Cambrian? to Middle Proterozoic)
Upper part (Lower Cambrian? and Late Proterozoic)—Unit of highly varied lithologies and abrupt facies changes; consists mainly of argillite, quartzite, dolomite, dolosarenite, basalt, red beds, black limestone, carbonate-clast conglomerate, and chert
Ytl — Lower part (Middle Proterozoic)—Interfingering stromatolitic limestone, carbonaceous argillite, and dismictite

Intrusive Igneous Rocks

TKg — Granitic rocks (Lower Tertiary and(or) Cretaceous)

For more detailed descriptions of stratigraphic units in the Charley River quadrangle, see Brabb (1967, 1969), Brabb and Churkin (1967, 1969), Churkin and Brabb (1965), Clough (1980), Clough and Blodgett (1984), Dover (in press), Foster and others (1983), and Young (1982).

Contact—Dotted where concealed; querried where uncertain
Trace of bedding or marker bed
Fault—Dotted where concealed; querried where uncertain
KRLS — High-angle or listric normal fault—Bar and ball on down-thrown side. Letters refer to LIST OF NAMED STRUCTURES
Strike-slip fault—Arrows show sense of relative slip
ACT — Thrust fault—Sawteeth on upper plate. Letters refer to LIST OF NAMED STRUCTURES.
Axial trace of major fold—Dotted where concealed. Arrow shows direction of plunge, where known. Letters refer to LIST OF NAMED STRUCTURES
BMCA — Anticline
BS — Syncline
Overturned anticline
Overturned syncline

LIST OF NAMED STRUCTURES

Thrust faults

ACT Andrew Creek thrust
BLD Black River duplex
BMCT Bear Mountain Creek thrust
BT Bly thrust
CCT Cathedral Creek thrust
FJT Fourth-of-July Creek thrust
HLD Hard Luck duplex
HLT Hard Luck thrust
JCT Judge Creek thrust
KD Kandik detachment
KMT Kathul Mountain thrust
LBRT Little Black River thrust
LCT Logan Creek thrust
MBT Montauk Bluff thrust
MCT Midnight Creek thrust
NRT Nation Reef thrust
NRT Nation River thrust system
PCT Pass Creek thrust
PDCT Paddle Creek thrust
SCT Stidcon Creek thrust
SPT Snowy Peak thrust
TCT Three Castle Mountain thrust
TMT Threemile Creek thrust
TT Tatonduk thrust
WCT Waterfall Creek thrust
WT Wedge thrust
WRT Wood River thrust
YT Yukon thrust

Normal faults

KRLS Kandik River listric fault system
NRLS Nation River listric fault system

Folds

BS Bly syncline
BMCA Bear Mountain Creek anticline
BMCS Bear Mountain Creek syncline
CCA Cathedral Creek arch
ECS Edwards Creek syncline
HFB Half fold belt
HA Hard anticline
HS Hard syncline
HLA Hard Luck anticline
HCA Harrington Creek anticline
JCS Judge Creek syncline
IGS Indian Grave syncline
KMS Kathul Mountain syncline
MA Marlow Creek anticline
MS Marlow Creek syncline
MCA Michigan Creek anticline
MNA Midnight Creek anticline
MNS Midnight Creek syncline
NA Nation anticline
PA Peb anticline
PS Peck syncline
SMA Step Mountain anticline
TA Two anticline
TCA Tatonduk Creek anticline
TCS Tatonduk Creek syncline
TMCA Threemile Creek anticline
TRA Tributary anticline
WCA Webber Creek anticline
WNS West Nation syncline
WNS Windfall Mountain syncline
WRS Wood River syncline
WA Woodchopper anticline

REFERENCES CITED

Brabb, Earl E., 1967, Stratigraphy of Cambrian and Ordovician rocks of east-central Alaska: U.S. Geological Survey Professional Paper 559-A, 30 p.

_____, 1969, Six new Paleozoic and Mesozoic formations in east-central Alaska: U.S. Geological Survey Bulletin 1274-I, 26 p.

Brabb, Earl E., and Churkin, Michael, Jr., 1967, Stratigraphic evidence for the age of the Nation River Formation, east-central Alaska: U.S. Geological Survey Professional Paper 575-D, p. D4-D15.

_____, 1969, Geologic map of the Charley River quadrangle, east-central Alaska: U.S. Geological Survey Map I-573, scale 1:250,000.

Churkin, Michael, Jr., and Brabb, Earl E., 1965a, Ordovician, Silurian, and Devonian biostratigraphy of east-central Alaska: American Association of Petroleum Geologists Bulletin v. 49, no. 2, p. 172-185.

Clough, James G., 1980, Fossil algae in Lower Devonian limestones, east-central Alaska, in Short notes on Alaskan geology, 1979-80: Alaska Division of Geological and Geophysical Surveys Geologic Report 63, p. 19-21.

Clough, James G., and Blodgett, Robert B., 1984, Lower Devonian basin to shelf carbonates in outcrop from western Ogilvie Mountains, Alaska and Yukon Territory: Canadian Society of Petroleum Geologists Core Conference—Carbonates in subsurface and outcrop, October 18-19 (Calgary, Alberta), p. 57-79.

Dover, James H., in press, Geologic map and fold and thrust belt interpretation of the southeastern part of the Charley River quadrangle, east-central Alaska: U.S. Geological Survey Miscellaneous Investigations Map I-1942, scale 1:100,000.

Foster, Helen L., Laird, Jo, Keith, Terry E. C., Cushing, Grant W., and Nenzie, W. D., 1983, Preliminary geologic map of the Circle quadrangle, Alaska: U.S. Geological Survey Open-file Report 83-170-A, 30 p., scale 1:250,000.

Miyaoka, Ronny T., in press, Fossil locality map and fossil data for the southeastern part of the Charley River quadrangle, east-central Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-2007, scale 1:100,000.

Young, Grant M., 1982, Proterozoic Tindir Group, east-central Alaska—Evolution of a continental margin: Geological Society of America Bulletin v. 93, no. 8, p. 959-783.

GEOLOGIC MAP

REINTERPRETED GEOLOGIC MAP AND FOSSIL DATA, CHARLEY RIVER QUADRANGLE, EAST-CENTRAL ALASKA

By

James H. Dover and Ronny T. Miyaoka

1988

Interior—Geological Survey, Reston, Va.— 1988

For sale by U.S. Geological Survey, Alaska Distribution Section, New Federal Bldg., Box 12, 101 Twelfth Avenue, Fairbanks, AK 99701, and U.S. Geological Survey, Map Distribution, Box 25286, Federal Center, Denver, CO 80225